

CLAIMS

What is claimed is:

1. A heat exchanger apparatus for use with a tumble dryer, the apparatus
5 comprising:
 - a heat exchanger core portion that includes a hot air passageway
connected to a tumble dryer exhaust for receiving a volume of hot humid
air and having a first heat exchange area, and an ambient air
passageway having an inlet opening for receiving a volume of ambient
10 air and having a second heat exchange area in contact with the first heat
exchange area and generally orthogonal relative thereto, the ambient air
being drawn into the second heat exchange area of the ambient air
passageway and heated by the hot air moving in the first heat exchange
area;
 - 15 - the hot air passageway and the ambient air passageway being disposed
in the heat exchanger core portion that is sufficiently narrow to fit into a
limited area surrounding the tumble dryer.
2. The apparatus, according to claim 1, in which the first heat exchange
20 area and the second heat exchange area are sandwiched between a first
sidewall and a second sidewall, the first sidewall being disposed towards the
tumble dryer and the second sidewall being disposed away from the tumble
dryer.
- 25 3. The apparatus, according to claim 2, in which the first heat exchange
area includes a plurality of hot air channels and the second heat exchange area
includes a plurality of ambient air channels.
- 30 4. The apparatus, according to claim 3, in which the hot air channels are
sandwiched between alternate ambient air channels and are in intimate contact
therewith along a substantial portion of the first and second heat exchange
areas.

5. The apparatus, according to claim 4, in which each of the ambient air channels include a pair of spaced apart channel sidewalls and a spacer web disposed therebetween to subdivide the ambient air channels into a plurality of ambient air sub-channels.
- 5
6. The apparatus, according to claim 5, in which the heat exchanger core portion includes an inner sidewall and an outer sidewall, one ambient air channel being sealingly connected to an inwardly facing sidewall surface of each of the inner and outer sidewalls.
- 10
7. The apparatus, according to claim 6, in which the ambient air passageway further includes a room heater outlet located downstream from the inlet opening.
- 15
8. The apparatus, according to claim 7, in which the inlet opening includes a front upper intersection located at a front first corner of an upper core portion and a front lower intersection located at a front second corner of a lower core portion.
- 20
9. The apparatus, according to claim 8, in which the room heater outlet includes a rear upper intersection located at a rear first corner of the upper core portion and a rear lower intersection located at a rear second corner of the lower core portion.
- 25
10. The apparatus, according to claim 9, in which the ambient air channels and the hot air channels are sealed into a sealing compound that extends across each of the upper and lower intersections.
- 30
11. The apparatus, according to claim 10, in which a first airtight seal is located at a front portion of each of the hot air channels, the first airtight seal extending between the front upper and lower intersections.
12. The apparatus, according to claim 11, in which a second airtight seal is located at a rear portion of each of the hot air channels, the second airtight seal

extending between the rear upper and lower intersections.

13. The apparatus, according to claim 12, in which the first and second airtight seals are a plurality of spacer pads that are positioned generally
5 orthogonal to the spacer webs.

14. The apparatus, according to claim 13, in which the spacer pads and the spacer webs are each sealingly connected to the front and rear intersections.

10 15. The apparatus, according to claim 14, in which a room heater conduit is connected to the room heater outlet.

16. The apparatus, according to claim 15, in which a fan is rotatably connected to the room heater conduit.

15

17. The apparatus, according to claim 16, in which a tapered chimney is removably connected to a hot air passageway outlet located downstream from the tumble dryer exhaust.

20 18. The apparatus, according to claim 17, in which the tapered chimney, when in use, is sealingly mounted on the upper edges of the upper core portion.

19. The apparatus, according to claim 18, in which the inlet opening is a generally elongate rectangular unrestricted opening defined by the inner
25 sidewall, the outer sidewall, and the sealed front intersection.

20. The apparatus, according to claim 19, in which the length of the hot air channels are generally double the length of the ambient air channels.

30 21. The apparatus, according to claim 20, is a narrow, rectangular structure.

22. The apparatus, according to claim 21, in which the heat exchanger core portion is removable.